

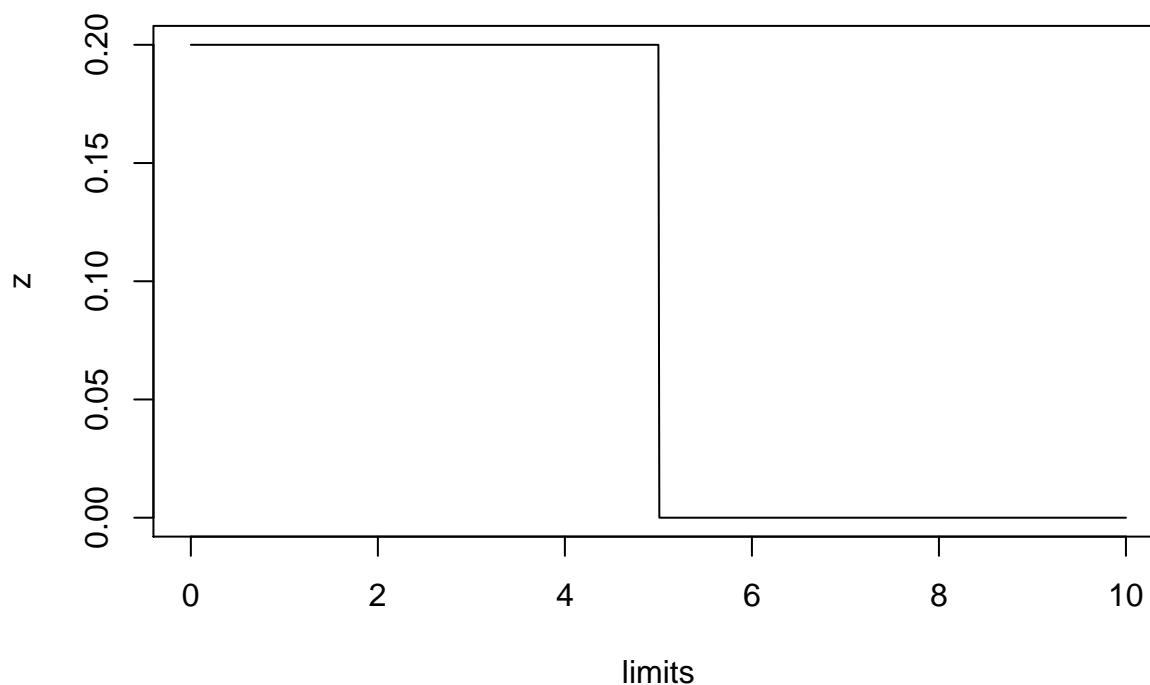
ContinuousProbabilityDistributions.R

Administrator

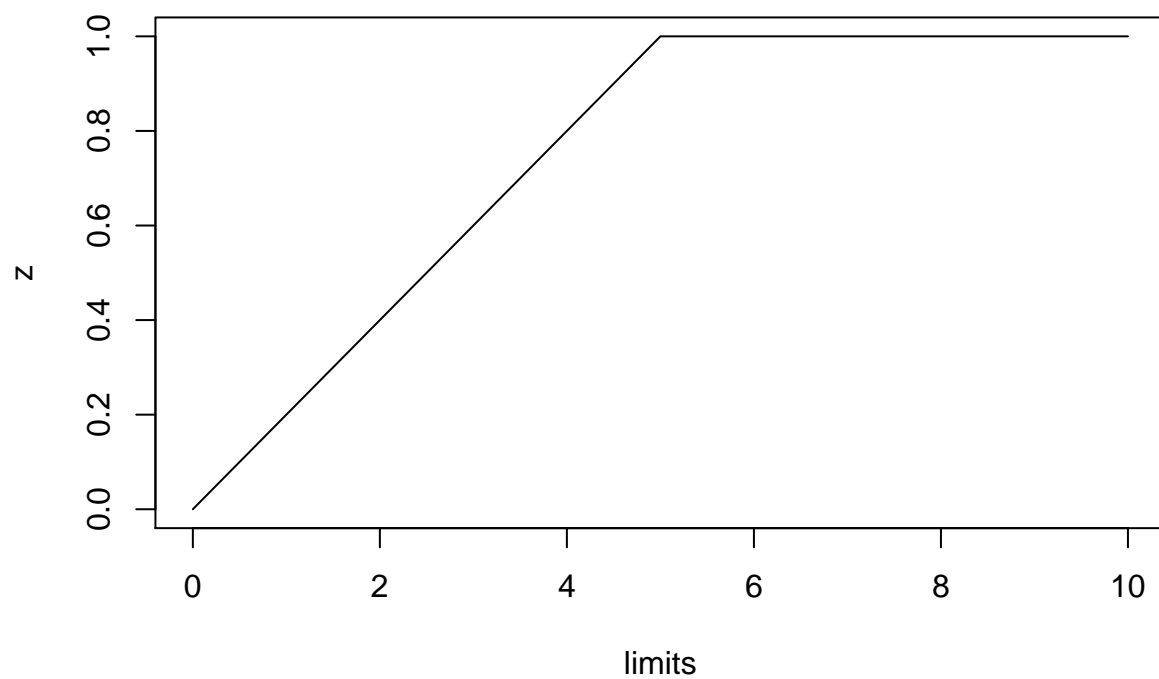
Thu Mar 24 15:21:42 2016

```
# Continuous probability distributions  
# 24 March 2016  
# NJG
```

```
# uniform  
# params specific minimum and maximum  
  
# dunif for density plot  
limits <- seq(0,10,by=0.01)  
z <-dunif(x=limits,min=0,max=5)  
names(z) <- limits  
plot(x=limits, y=z,type="l",xlim=c(0,10))
```



```
#punif for cumulative density (= tail probabilities)  
limits <- seq(0,10,by=0.01)  
z <-punif(q=limits,min=0,max=5)  
names(z) <- limits  
plot(x=limits, y=z,type="l",xlim=c(0,10))
```

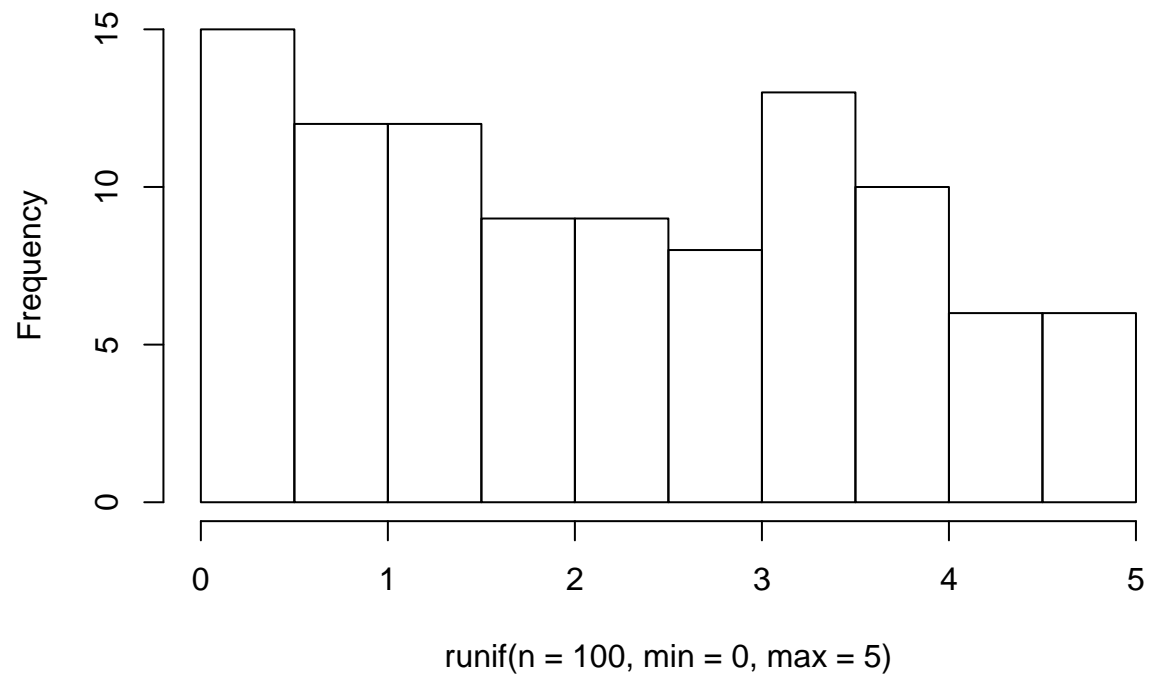


```
#qunif for quantiles  
qunif(p=c(0.025,0.975),min=0,max=5)
```

```
## [1] 0.125 4.875
```

```
#runif for random data  
hist(runif(n=100,min=0,max=5))
```

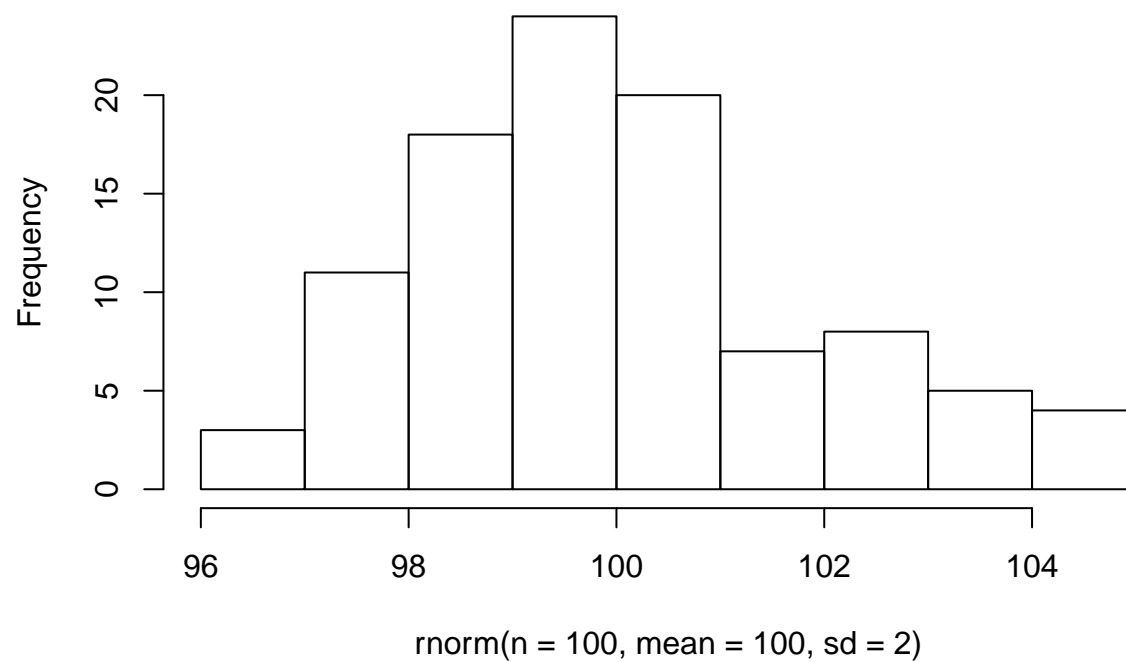
Histogram of runif(n = 100, min = 0, max = 5)



```
# normal
```

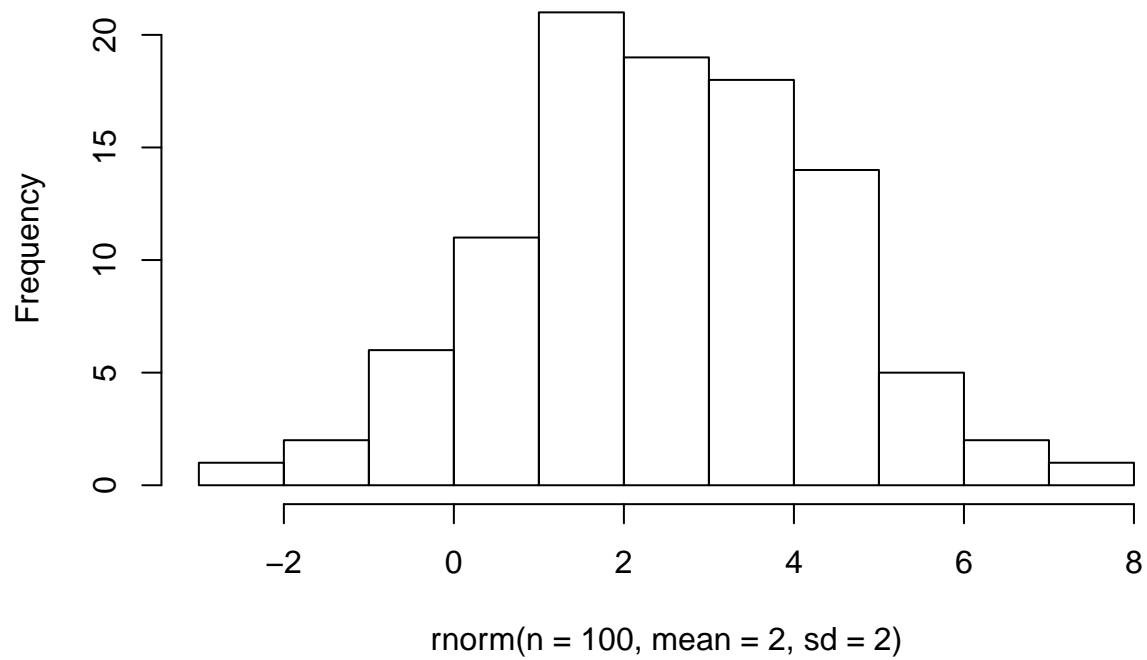
```
hist(rnorm(n=100,mean=100,sd=2))
```

Histogram of `rnorm(n = 100, mean = 100, sd = 2)`



```
# problems with uniform when mean is small but zero is not allowed.  
hist(rnorm(n=100,mean=2,sd=2))
```

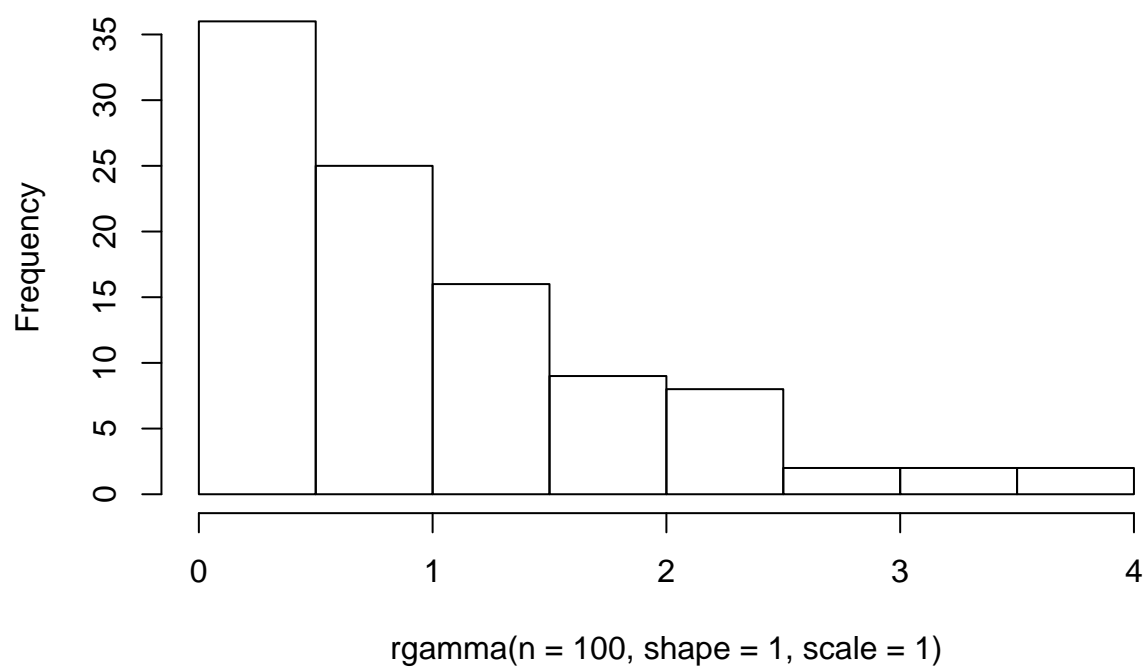
Histogram of `rnorm(n = 100, mean = 2, sd = 2)`



gamma distribution, continuous positive values, but bounded at 0

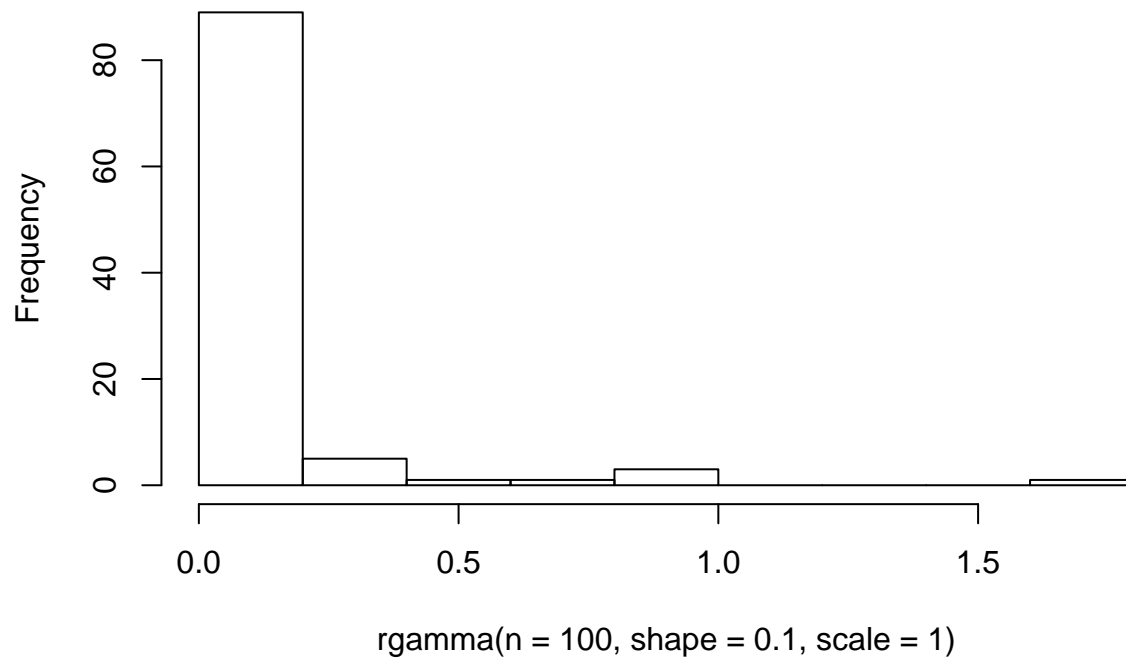
```
hist(rgamma(n=100,shape=1,scale=1))
```

Histogram of `rgamma(n = 100, shape = 1, scale = 1)`



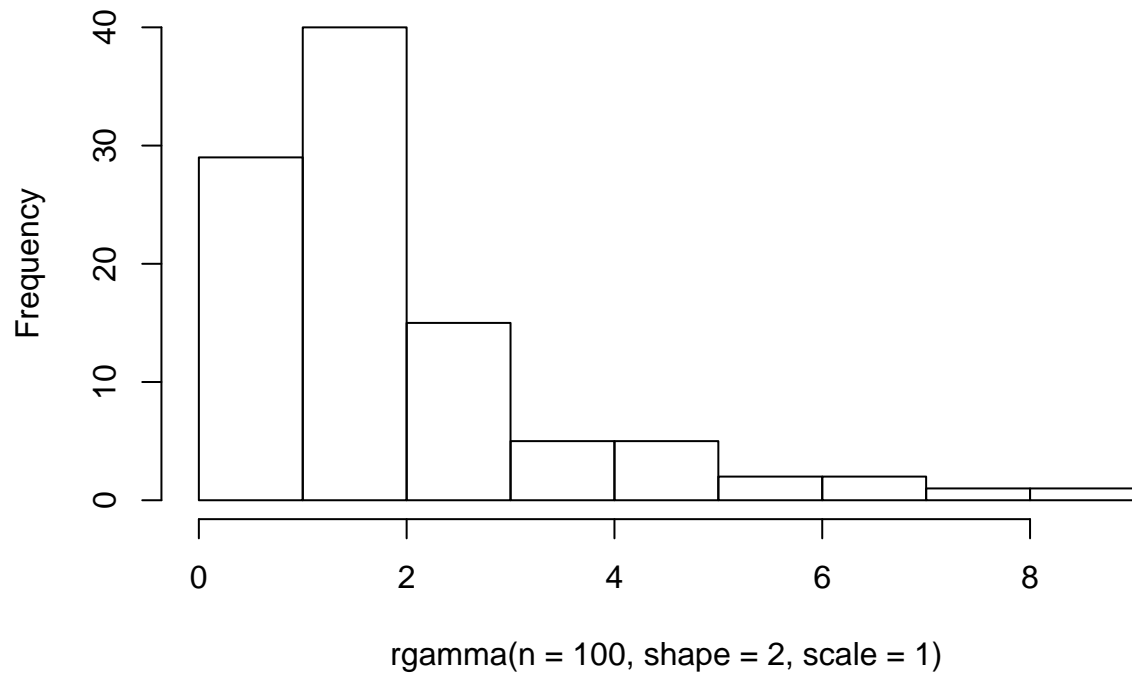
```
# shape <=1 gives a mode near zero; very small shape rounds to zero  
hist(rgamma(n=100,shape=0.1,scale=1))
```

Histogram of `rgamma(n = 100, shape = 0.1, scale = 1)`



```
# large shape parameters moves towards a normal  
hist(rgamma(n=100,shape=2,scale=1))
```

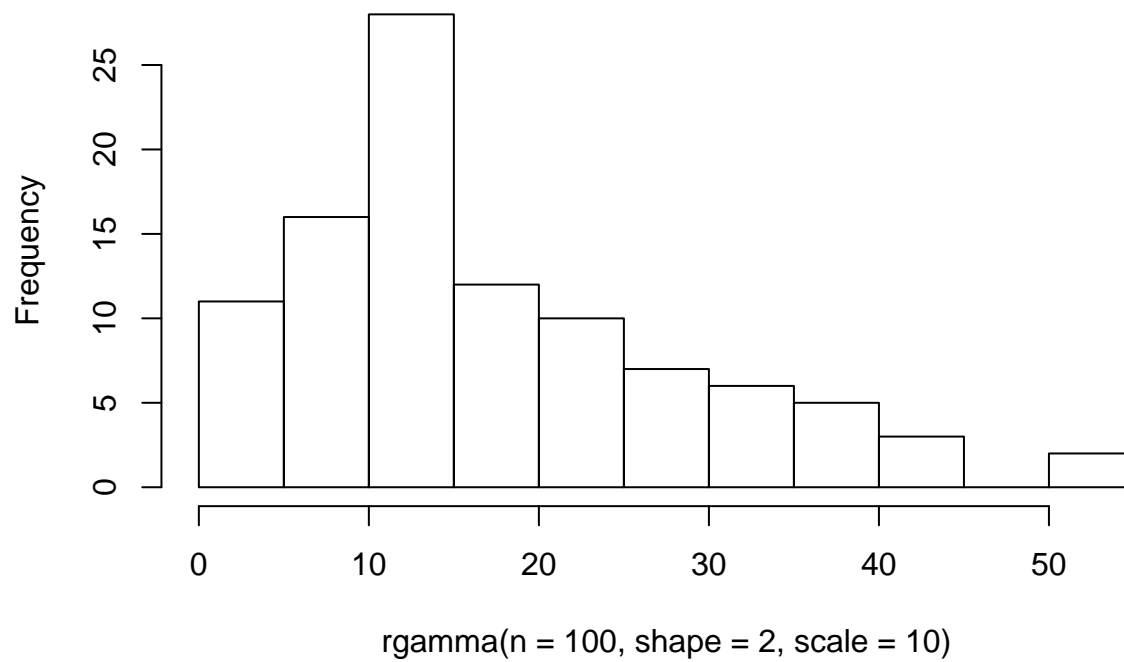
Histogram of `rgamma(n = 100, shape = 2, scale = 1)`



scale parameter changes mean- and the variance!

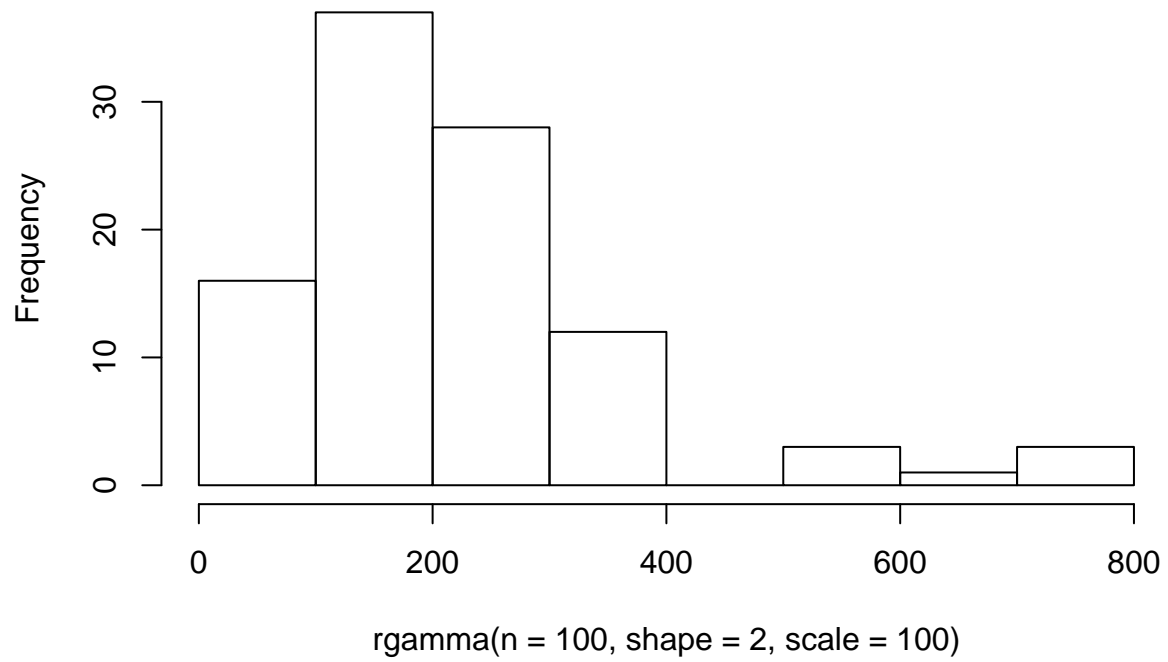
```
hist(rgamma(n=100,shape=2,scale=10))
```


Histogram of `rgamma(n = 100, shape = 2, scale = 10)`



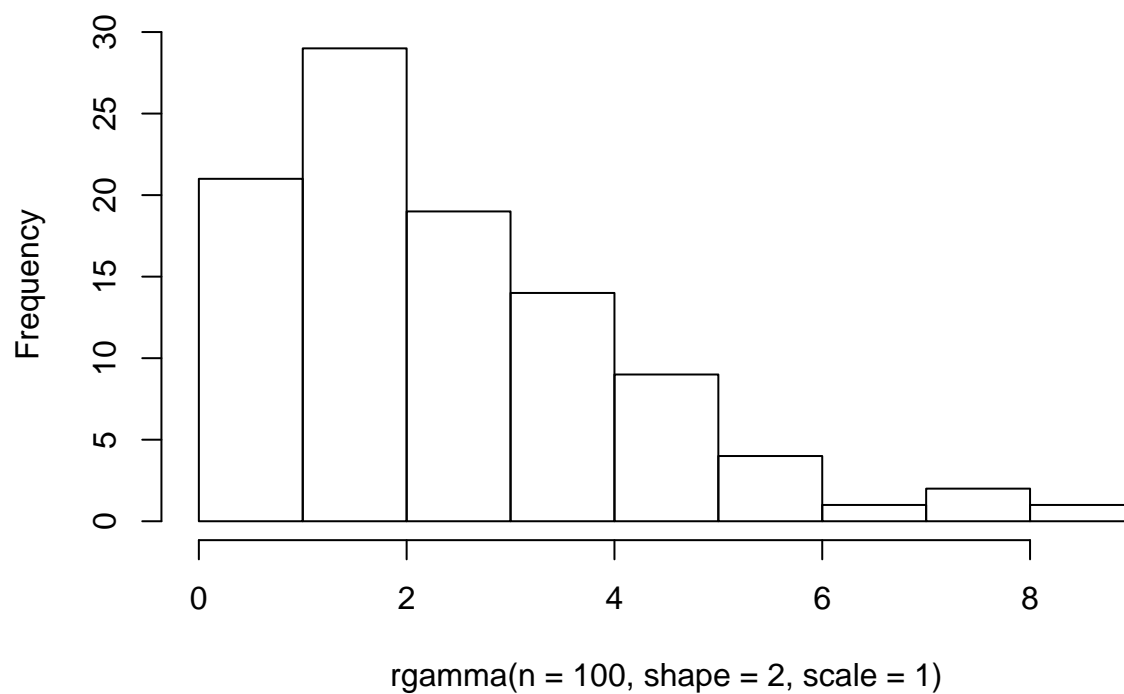
```
hist(rgamma(n=100,shape=2,scale=100))
```

Histogram of `rgamma(n = 100, shape = 2, scale = 100)`



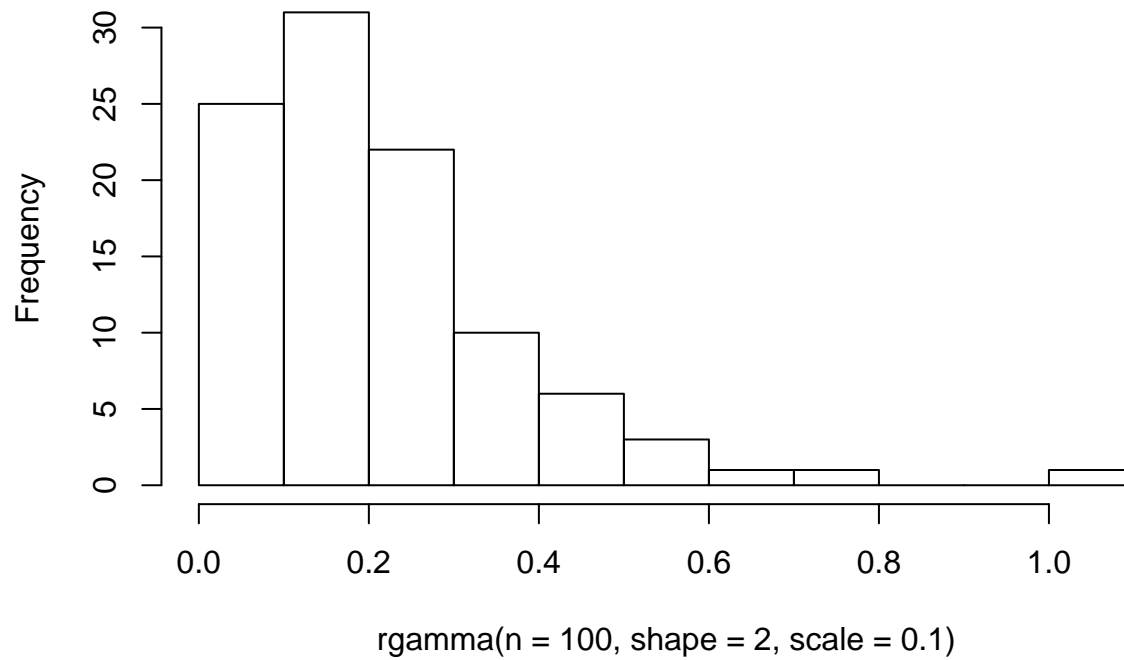
```
hist(rgamma(n=100,shape=2,scale=1))
```

Histogram of rgamma(n = 100, shape = 2, scale = 1)



```
hist(rgamma(n=100,shape=2,scale=0.1))
```

Histogram of $\text{rgamma}(n = 100, \text{shape} = 2, \text{scale} = 0.1)$



unlike the normal, the two parameters affect both mean and variance

*# mean = shape*scale*

*# variance= shape*scale²*